NISTTech

Lead-Based Solders for High Temperature Applications

Abstract

A high lead solder exhibiting improved wettability to metal substrates, an advantageously controlled melting range, and excellent thermal fatigue properties. It comprises about 98-100% lead and a minor amount, typically about 0.0005-0.1 wt %, based on the total weight of the solder composition, of an alkali metal selected from the group consisting of Na, K, and Li. Additional embodiments additionally comprise an amount of a grain-size controlling additive, e.g., 0.001-0.5 wt % (based on the total weight of all the components in the solder composition) selected from the group consisting of Ce, Ba, La, Pr, Nd, Sm, Eu, Gd, Th, Dy, Ho, Er, Tm, Yb, Y, Lu, Sc, Mg, Na, Se, Te, oxides thereof and mixtures thereof, in amount effective to control the Pb grain size; and 0-1 wt % of an element selected from the group consisting of Sn, In, Bi, Sb, Ag, Au, and Ga, and mixtures thereof.

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References

- Expired U.S. Patent # 6,059,900 expired 11/30/2007
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Status of Availability

This technology is available in the public domain.

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